

TUBERCULOSIS IN UTAH TEN YEAR STATISTICAL REVIEW 1992-2001

Total Cases

The state of Utah had an average of 50 cases of active TB reported each year between 1992 and 2001 (range: 35 - 78). Thirty-five active cases of tuberculosis (TB) were reported in Utah in 2001. There were 49 cases reported in 2000, 40 in 1999, 52 in 1998, and 36 in 1997, 58 in 1996, 48 in 1995, 56 in 1994, 47 in 1993, and 78 in 1992.

Case Rates

The state of Utah has had an average of 2.4 cases of tuberculosis per 100,000 persons between 1992 and 2001 (range: 1.5 - 4.2 cases per 100,000 persons). The 2001 TB case rate was 1.5 per 100,000 persons compared with 2.2 per 100,000 persons in 2000. The case rate for 1999 was 1.8 per 100,000 persons, for 1998 was 2.4 per 100,000 persons, for 1997 was 1.7 per 100,000 persons, for 1996 was 2.8 per 100,000 persons, for 1995 was 2.4 per 100,000 persons, for 1994 was 2.9 per 100,000 persons, for 1993 was 2.5 per 100,000 persons, and for 1992 was 4.2 per 100,000 persons. (The case rates were calculated using population estimates from the Utah Indicator Based Information System-Query.)

<u>Year</u>	<u># of Cases</u>	<u>Male</u>	<u>Female</u>
2001	35	24 (69%)	11 (31%)
2000	49	34 (69%)	15 (31%)
1999	40	25 (63%)	15 (37%)
1998	52	29 (56%)	23 (44%)
1997	36	21 (58%)	15 (42%)
1996	58	40 (69%)	18 (31%)
1995	48	37 (77%)	11 (23%)
1994	56	41 (73%)	15 (27%)
1993	47	33 (70%)	14 (30%)
1992	78	53 (70%)	25 (30%)

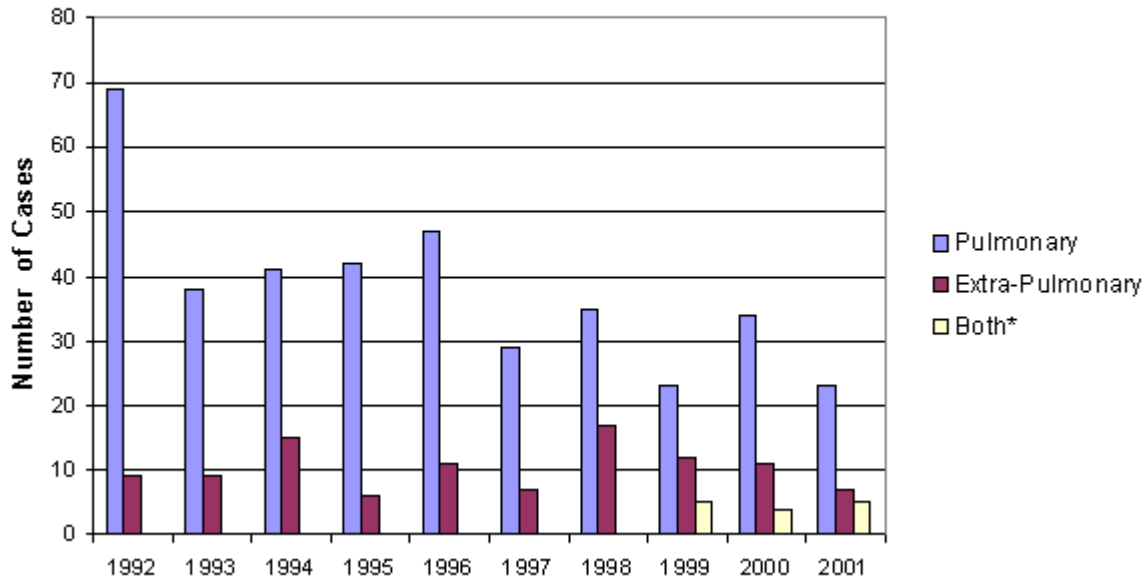
Site of Disease

It is impossible to calculate a strict ten year average for the site of disease (i.e., pulmonary versus extrapulmonary disease) because two different counting methods were used, one for 1992-1998 and a second for 1999-2001. The yearly percentages for pulmonary vs extrapulmonary have been calculated.

In 2001, the percentage of TB cases with pulmonary disease alone was 66% (23 of 35 cases), the percentage of TB cases with extrapulmonary disease alone was 20% (7 of 35), and the percentage of TB cases with both pulmonary and extrapulmonary involvement was 14% (5 of 35). In 2000, the percentage of cases with pulmonary disease alone was 69% (34 of 49), extrapulmonary alone was 22% (11 of 49), and both was 8% (4 of 49). In 1999, the percentage of cases with pulmonary disease alone was 58% (23 of 40), with extrapulmonary alone was 30% (12 of 40), and with both was 13% (5 of 40).

Prior to 1999, persons with TB were classified as having either pulmonary or extrapulmonary disease; there was no third category for persons having both types of disease. Pulmonary disease was identified for 67% (35 of 52) of cases in 1998, 81% (29 of 36) in 1997, 81% (47 of 58) in 1996, 88% (42 of 48) in 1995, 73% (41 of 56) in 1994, 81% (38 of 47) in 1993, and 89% (69 of 78) in 1992. Extrapulmonary disease was diagnosed in 33% (17 of 52) of cases in 1998, 19% (7 of 36) in 1997, 19% (11 of 58) in 1996, 13% (6 of 48) in 1995, 27% (15 of 56) in 1994, 19% (9 of 47) in 1993, and 12% (9 of 78) in 1992.

Site of Disease, 1992-2001



* Prior to 1999, persons with TB were classified as having either pulmonary or extrapulmonary disease; there was no third category for persons having both types of disease. _____

Gender

Males account for more of Utah's TB morbidity than females. Over the past ten years, males have accounted for an average of 67% of cases each year, while females have accounted for 33%. During 2001, 69% (24 of 35) of persons with TB in Utah were male, and 31% (11 of 35) were female. In 2000 69% (34 of 49) of persons with TB were male, and 31% (15 of 49) were female. In 1999, 63% (25 of 40) of persons with TB were male, and 37% (15 of 40) were female. In 1998, 56% (29 of 52) were male, and 44% (23 of 52) were female. In 1997, 58% (21 of 36) were male, and 42% (15 of 36) were female. In 1996, 69% (40 of 58) were male, and 31% (18 of 58) were female. In 1995, 77% (37 of 48) were male, and 23% (11 of 48) were female. In 1994, 73% (41 of 56) were male, and 27% (15 of 56) were female. In 1993, 70% (33 of 47) were male, and 30% (14 of 47) were female. In 1992, 70% (53 of 78) were male, and 30% (25 of 78) were female.

Age

The percentage of Utah's TB cases in persons 0-14 years of age for the ten-year period of 1992-2001 ranged from 1% to 22%, with an average of 8%. Persons 15-64 years of age accounted for 61% to 82% of Utah's TB cases, with a ten-year average of 70%. Persons 65 years of age and older accounted for 16% to 32% of Utah's TB cases, with a ten-year average of 23%.

In 2001, 9% (3 of 35) of persons with TB in Utah were children 0-14 years of age. In 2000, the percentage of children 0-14 years of age with TB was 2% (1 of 49), 8% (3 of 40) in 1999, 4% (2 of 52) in 1998, 22% (8 of 36) in 1997, 9% (5 of 58) in 1996, 6% (3 of 48) in 1995, 13% (7 of 56) in 1994, 2% (1 of 47) in 1993, and 1% (1 of 78) in 1992.

In 2001, 74% (26 of 35) of persons with TB in Utah were between 15-64 years of age. In 2000, the percentage of persons 15-64 years of age with TB was 82% (40 of 49), 63% (25 of 40) in 1999, 73% (38 of 52) in 1998, 61% (22 of 36) in 1997, 71% (41 of 58) in 1996, 63% (30 of 48) in 1995, 71% (40 of 56) in 1994, 66% (31 of 47) in 1993, and 73% (57 of 78) in 1992.

In 2001, 17% (6 of 35) of persons with TB in Utah were 65 years of age or older. In 2000, the percentage of persons 65 years of age or older with TB was 16% (8 of 49), 30% (12 of 40) in 1999, 23% (12 of 52) in 1998, 17% (6 of 36) in 1997, 21% (12 of 58) in 1996, 31% (15 of 48) in 1995, 16% (9 of 56) in 1994, 32% (15 of 47) in 1993, and 26% (20 of 78) in 1992.

Race/Ethnicity

For the ten year period of 1992-2001, white, non-Hispanic persons accounted for an average of 42% of Utah's TB morbidity (range: 29% - 56%). Black, non-Hispanic persons accounted for an average of 9% of Utah's TB morbidity (range: 2% - 25%); Native Americans/Alaskan Natives accounted for an average of 11% of morbidity (range: 0% - 22%); Asian/Pacific Islanders accounted for an average of 17% of morbidity (range: 4% - 37%); and, persons of Hispanic ethnicity accounted for an average of 22% of morbidity (range: 11% - 37%).

In 2001, 29% (10 of 35) of persons with TB in Utah were White, non-Hispanic. White, non-Hispanic persons accounted for 45% (22 of 49) of Utah's TB cases in 2000, 30% (12 of 40) in 1999, 33% (17 of 52)

in 1998, 42% (15 of 36) in 1997, 31% (18 of 58) in 1996, 56% (27 of 48) in 1995, 52% (29 of 56) in 1994, 47% (22 of 47) in 1993, and 55% (43 of 78) in 1992. In 2001, 11% (4 of 35) of persons with TB in Utah were Black, non-Hispanic. Black, non-Hispanic persons accounted for 10% (5 of 49) of Utah's TB cases in 2000, 8% (3 of 40) in 1999, 6% (3 of 52) in 1998, 25% (9 of 36) in 1997, 3% (2 of 58) in 1996, 6% (3 of 48) in 1995, 9% (5 of 56) in 1994, 2% (1 of 56) in 1993, and 6% (5 of 78) in 1992.

In 2001, 6% (2 of 35) of persons with TB in Utah were Native American/Alaskan. Native Americans/Alaskan Natives accounted for none (0 of 40) of Utah's TB cases in 2000, 18% (7 of 40) in 1999, 8% (4 of 52) in 1998, 8% (3 of 36) in 1997, 22% (13 of 58) in 1996, 17% (8 of 48) in 1995, 9% (5 of 56) in 1994, 11% (5 of 47) in 1993, and 8% (6 of 78) in 1992. In 2001, 17% (6 of 35) of persons with TB in Utah were Asian/Pacific Islanders. Asian/Pacific Islanders accounted for 14% (7 of 49) of Utah's TB cases in 2000, 25% (10 of 40) in 1999, 37% (19 of 52) in 1998, 14% (5 of 36) in 1997, 16% (9 of 58) in 1996, 6% (3 of 48) in 1995, 4% (2 of 56) in 1994, 23% (11 of 47) in 1993, and 17% (13 of 78) in 1992.

In 2001, 37% (13 of 35) of persons with TB in Utah were of Hispanic ethnicity. Persons of Hispanic ethnicity accounted for 31% (15 of 49) of Utah's TB cases in 2000, 20% (8 of 40) in 1999, 17% (9 of 52) in 1998, 11% (4 of 36) in 1997, 28% (16 of 58) in 1996, 15% (7 of 48) in 1995, 27% (15 of 56) in 1994, 17% (8 of 47) in 1993, and 14% (11 of 78) in 1992.

Foreign-born Population

In the state of Utah, the percentage of persons with TB born outside of the U.S. ranged between 8% and 63%, with an average of 35% for the ten year period. In the years 1998-2001, half or more of the persons diagnosed with TB in Utah were born outside of the U.S.. This is consistent with other state trends in the rest of the United States. The number of states with at least 50% of their annual TB cases among the foreign-born increased from 4 in 1992 to 21 in 2000 (CDC. *MMWR, February 8, 2002/51(05):101-4.*).

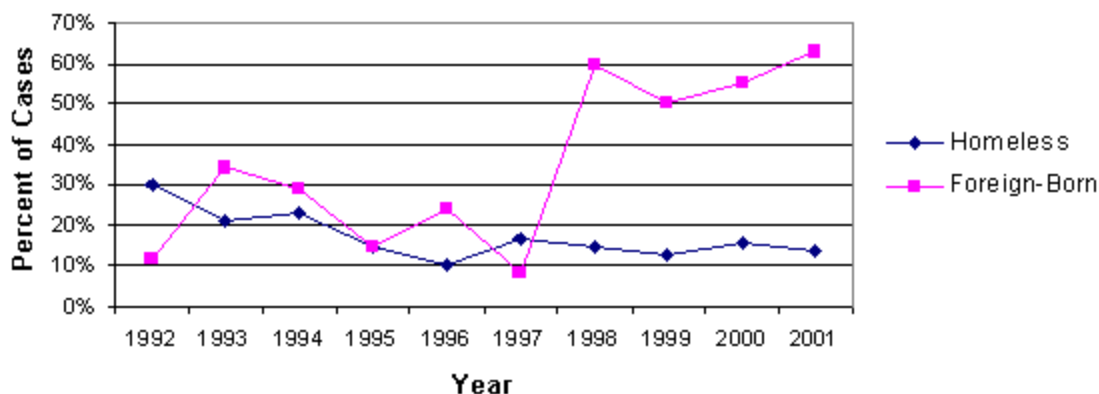
In 2001, 63% (22 of 35) of persons with TB in Utah were born outside of the U.S.. Persons born outside of the U.S. accounted for 55% (27 of 49) of the TB cases in 2000, 50% (20 of 40) in 1999, 60% (31 of 52) in 1998, 8% (3 of 36) in 1997, 24% (14 of 58) in 1996, 15% (7 of 48) in 1995, 29% (16 of 56) in 1994, 34% (16 of 47) in 1993, and 12% (9 of 78) in 1992.

Homeless

From 1992-2001, an average of 17% of persons with TB was homeless at the time of their diagnosis. During this ten year period, the majority of persons with TB were living in a primary residence at the time of their diagnosis. The ten year average was 73% for cases living in a private residence, 4% for cases living in a correctional facility, and 6% for cases living in a long term care facility.

In 2001, 14% (5 of 35) of the persons with TB in Utah were homeless. Homeless persons accounted for 16% (8 of 49) of Utah's TB morbidity in 2000, 13% (5 of 40) in 1999, 15% (8 of 52) in 1998, 17% (6 of 36) in 1997, 10% (6 of 58) in 1996, 15% (7 of 48) in 1995, 23% (13 of 56) in 1994, 21% (10 of 47) in 1993, and 30% (23 of 78) in 1992.

Utah TB Cases in the Foreign-Born and Homeless Population, 1992-2001



Drug Sensitivity Testing

During the last ten years, the average percentage of TB cases confirmed by laboratory culture was 78% (range: 45% to 92%) and the average percentage of TB cases confirmed by a physician's diagnosis was 22% (range: 8% to 55%). Of the 35 cases of tuberculosis reported in Utah in 2001, 77% (27 of 35) were confirmed by laboratory culture; the remaining 23% (8 of 35) were verified by a physician's diagnosis. This is similar to 2000 where 88% (43 of 49) of tuberculosis cases were confirmed by laboratory culture, and 12% (6 of 49) were verified by a physician's diagnosis. In 1999, 45% (18 of 40) of TB cases in Utah were confirmed by laboratory culture, and 55% (22 of 40) were verified by a physician's diagnosis. In 1998, 92% (48 of 52) of TB cases were confirmed by laboratory culture, and 8% (4 of 52) were verified by a physician's diagnosis. In 1997, 72% (26 of 36) of TB cases were confirmed by laboratory culture, and 28% (10 of 36) were verified by a physician's diagnosis. In 1996, 78% (45 of 58) of TB cases were confirmed by laboratory culture, and 22% (13 of 58) were verified by a physician's diagnosis. In 1995, 92% (44 of 48) of TB cases were confirmed by laboratory culture, and 8% (4 of 48) were verified by a physician's diagnosis. In 1994, 75% (42 of 56) of TB cases were confirmed by laboratory culture, and 25% (14 of 56) were verified by a physician's diagnosis. In 1993, 83% (39 of 47) of TB cases were confirmed by laboratory culture, and 17% (8 of 47) were verified by a physician's diagnosis. Reliable information for drug sensitivity rates could not be found for 1992. The majority of Utah's TB cases were confirmed by laboratory culture for every year between 1993 and 2001 except for 1999.

Drug sensitivity testing was performed on the initial specimen isolates for 100% (27 of 27) of the positive cultures in 2001, 100% (43 of 43) in 2000, 100% (18 of 18) in 1999, and 100% in 1998. In 1997, drug sensitivity testing was performed on 69% (18 of 26) of the isolates, 78% (45 of 58) in 1996, 86% (38 of 44) in 1995, 85% (46 of 54) in 1994, and 64% (30 of 47) in 1993.

Drug Sensitivity Results

Over the ten-year period, 1992-2001, there has been a gradual increase in the number of culture isolates obtained from TB cases that have resistance to one or more antituberculosis medications relative to the total number of TB culture isolates (Chi-square for linear trend = 4.8; p value = 0.03). This troubling statistic highlights the need for continued drug sensitivity testing for all TB culture isolates, and the need for thorough follow-up of all TB patients to ensure that they take all their medicine as prescribed to treat their disease.

In 2001, 26% (9 of 35) of persons with TB in Utah had organisms that were resistant to one or more of the antituberculosis medications. Drug resistance to one or more medications was in 24% (12 of 49) of cases in 2000, 18% (7 of 40) of cases in 1999, 12% (6 of 52) of cases in 1998, 8% (3 of 36) of cases in 1997, 9% (5 of 58) of cases in 1996, 13% (6 of 48) of cases in 1995, 13% (7 of 56) of cases in 1994, 15% (7 of 47) of cases in 1993, and 12% (9 of 78) in 1992. The number of cases of multi-drug resistant (MDR) TB (resistance to at least INH and RIF) over the ten year period was one case in 2000, one case in 1999, one case in 1996, three cases in 1994, one case in 1993, and one case in 1992. There were no cases of MDR TB in 2001, 1998, 1997, and 1995.

DRUG RESISTANT TB CASES, 2001 - 1992

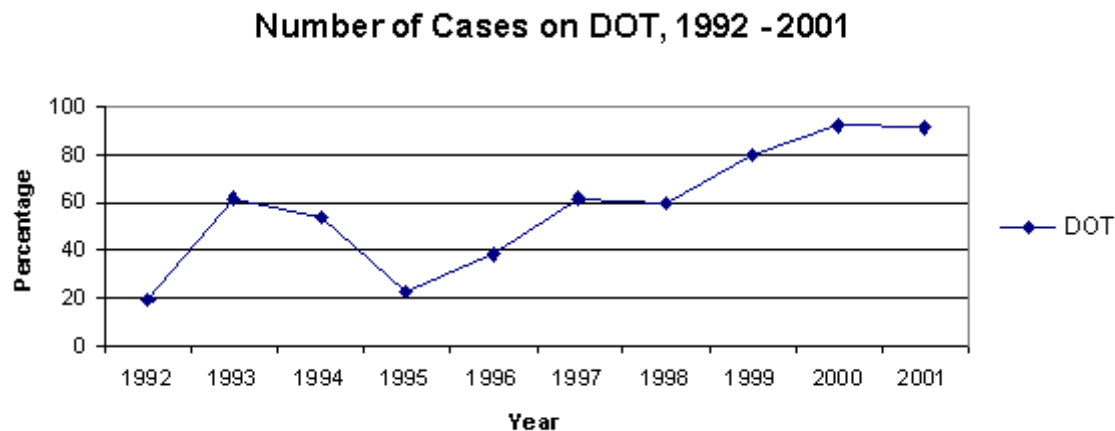
DRUGS								
YEAR	TB CASES	Drug Res. TB Cases	INH	RIF	PZA	SM	EMB	OTHER
2001	35	9 (26%)	2	0	2	7	2	0
2000	49	12 (24%)	7	1	3	6	2	1 (PAS)
1999	40	7 (18%)	2	0	1	4	1	0
1998	52	6 (12%)	3	0	1	6	1	0
1997	36	3 (8%)	1	0	0	2	1	0
1996	58	5 (9%)	2	1	0	3	3	0
1995	48	6 (13%)	2	1	4	2	0	0
1994	56	7 (13%)	4	3	0	4	0	0
1993	47	7 (15%)	5	1	1	3	0	1 (CIP)
1992	78	9 (12%)	4	1	0	2	4	0

INH = Isoniazid; RIF= Rifampin; PZA= Pyrazinamide; SM= Streptomycin; EMB= Ethambutol;

PAS= Para-amino-salicylic acid; CIP= Ciprofloxacin;

Directly Observed Therapy

Between 1992 and 2001, the average percentage of persons treated for TB in Utah who were provided DOT was 57% (range: 19% to 92%). Over the ten year period, this percentage increased significantly relative to the total number of persons with TB. In 2001, 91% (30 of 33) of persons with TB in Utah who were eligible to receive antituberculosis medications were provided directly observed therapy (DOT). In 2000, 92% (44 of 48) of persons with TB were provided DOT, 80% (32 of 36) in 1999, 60% (31 of 52) in 1998, 62% (21 of 34) in 1997, 38% (22 of 58) in 1996, 23% (11 of 48) in 1995, 54% (30 of 56) in 1994, 62% (28 of 45) in 1993, and 19% (15 of 78) in 1992.



Health District Distribution

The majority of Utah's TB morbidity occurs in its four major metropolitan counties, where 76% of the state's population resided in 2001 (according to population estimates from the Utah Department of Health's Action 2000 Health Information System). The ten-year average (from 1992-2001) of Utah's TB morbidity in these four counties is 85% (range: 71% to 94%).

In 2001, 94% (33 of 35) of the persons with TB in Utah were residing in one of the four major metropolitan counties in the state (i.e., Salt Lake, Utah, Davis and Weber Counties). In 2000, 92% (45 of 49) of the TB cases lived in one of these counties, 90% (36 of 40) in 1999, 88% (46 of 52) in 1998, 75% (27 of 36) in 1997, 86% (50 of 58) in 1996, 71% (34 of 48) in 1995, 82% (46 of 56) in 1994, 81% (38 of 47) in 1993, and 90% (70 of 78) in 1992.

Utah's non-metropolitan counties (i.e., all counties except Salt Lake, Utah, Davis and Weber Counties) were home to 6% (2 of 35) of the persons with TB in Utah in 2001, 8% (4 of 49) in 2000, 10% (4 of 40) in 1999, 12% (6 of 52) in 1998, 25% (9 of 36) in 1997, 14% (8 of 50) in 1996, 29% (14 of 48) in 1995, 18% (10 of 56) in 1994, 19% (9 of 47) in 1993, and 10% (8 of 78) in 1992.

